

I claim:

1. A method of focus control, comprising:
passing a light source beam over a reflectivity change on a storage media;
determining a change time of a reflectivity step function; and
determining a current light source spot size using the change time and a
storage media velocity.
2. The method of claim 2, further comprising:
adjusting a focus actuator to achieve a desired spot size based on the current
light source spot size.
3. The method of claim 1, wherein the reflectivity step function is derived
from the output of at least one photo sensor.
4. The method of claim 3, wherein the change time comprises a photo
sensor output rise time.
5. The method of claim 3, wherein the change time comprises a photo
sensor output fall time.
6. The method of claim 1, wherein:
passing the light source beam over the reflectivity change on the storage
media comprises moving the storage media with respect to the light source beam,
while holding the light source beam stationary; and
the storage media velocity is the velocity of the storage media relative to the
light source beam.

7. The method of claim 1, wherein:
 - passing the light source beam over the reflectivity change on the storage media comprises moving the light source beam with respect to the storage media, while holding the storage media stationary; and
 - the storage media velocity is the velocity of the storage media relative to the light source beam.
8. The method of claim 1, wherein:
 - passing the light source beam over the reflectivity change on the storage media comprises moving both the storage media and the light source beam with respect to each other; and
 - the storage media velocity is the velocity of the storage media relative to the light source beam.
9. The method of claim 1, wherein the reflectivity change on the storage media comprises a change from a higher reflectivity to a lower reflectivity.
10. The method of claim 1, wherein the reflectivity change on the storage media comprises a change from a lower reflectivity to a higher reflectivity.
11. The method of claim 1, wherein the reflectivity change on the storage media comprises a bar in a label layer of the storage media.
12. The method of claim 1, wherein the reflectivity change on the storage media comprises a stripe in a label layer of the storage media.
13. The method of claim 1, wherein the reflectivity change on the storage media comprises a checkerboard pattern in a label layer of the storage media.

14. The method of claim 1, wherein the reflectivity change on the storage media comprises a bar in a data layer of the storage media.

15. The method of claim 1, wherein the reflectivity change on the storage media comprises a stripe in a data layer of the storage media.

16. The method of claim 1, wherein the reflectivity change on the storage media comprises a checkerboard pattern in a data layer of the storage media.

17. The method of claim 1, wherein passing the light source beam over a reflectivity change on the storage media comprises passing the light source beam from a label side of the storage media over the reflectivity change on the storage media.

18. The method of claim 1, wherein the storage media is selected from the group consisting of a compact disc and a digital versatile disc.

19. A method for focus error signal generation, comprising:
passing a light source beam over a reflectivity change on a storage media;
and

determining a slope of a reflectivity step function, based on reflected light from the passing light source beam sensed by at least one photo sensor, for use as a focus error signal.

20. The method of claim 19, wherein determining the slope of the reflectivity step function comprises passing a photo sensor output through a differentiator.

21. The method of claim 19, wherein determining the slope of the reflectivity step function comprises passing a sum of multiple photo sensor outputs through a differentiator.

22. The method of claim 21, wherein the differentiator comprises a series capacitor and a resistor to ground.
23. The method of claim 19, further comprising normalizing the slope of the reflectivity step function by dividing the slope of the reflectivity step function by an amplitude of the at least one photo sensor.
24. A method of imaging a label layer on a storage media, comprising:
 - generating a focus error detection signal from a feature of reflectivity change on the label side of the storage media by analyzing a change time of a reflectivity step function;
 - adjusting a focus actuator to obtain a desired focus spot size by minimizing the focus error detection signal; and
 - selectively turning a light source on over areas of the label layer which are sensitive to the light source to produce a visible image on the label layer.
25. A storage media apparatus, comprising:
 - a focus lens;
 - a focus actuator coupled to the focus lens;
 - a light source configured to emit light through the focus lens onto a storage media;
 - a photo sensor configured to produce an output signal proportional to the total reflected light from the storage media; and
 - differentiator coupled to the photo sensor output signal.
26. The storage media apparatus of claim 25, wherein the storage media is selected from the group consisting of a compact disc and a digital versatile disc.

27. The storage media apparatus of claim 25, wherein the light source is further configured to emit light through the focus lens onto a label side of the storage media.
28. The storage media apparatus of claim 27, wherein the storage media is permanently housed in the storage media apparatus.
29. The storage media apparatus of claim 27, wherein the storage media is removeably housed in the storage media apparatus.